

IN THE CLAIMS:

Claims 1, 2, 5, 7, 9, 10, 14 - 16, 24, 29, 15, 16, 19, 23, 24, 29, 39, 41, 42, 44, 45, and 47 are amended, claims 51 - 58 are added, and claims 21 and 22 are cancelled.

1. (Currently Amended) A personal computer system comprising:

a plurality of different types of coordinate input devices;

an output means for outputting a signal from each of said coordinate input devices, the output means configured to embed an identifier in the signal that identifies one of the coordinate input devices; and

a processing means for alternating between the signals from said coordinate input devices as the signals are transmitted to the output means, said signals consisting of a first and a second data stream of at least three bytes or six bytes;

a buffer coupled to the processing means that receives data from the first input device and the second input device such that the coordinate input devices may be used simultaneously.

~~wherein a cursor displayed on a screen of said personal computer can be maintained at a constant position as one coordinate input device changes to another coordinate input device.~~

2. (Currently Amended) A personal computer system comprising:

a first input device;

a second input device, said second input device performing a detecting operation in a manner differing from said first input device; and

an output device configured to send an output signal from said first input device or said second input device or from said first input device and from said second input device in at least a three byte data stream or a six byte data stream, whereby said first input device and said second input device transmit signal in an alternating sequence from the first input device and the second input device whereby said output device combines signals received from the first input device and the second input device in an alternating

sequence wherein the first input device comprises a touch pad comprising an absolute pointing device and a relative pointing device.

3. (Original) A personal computer system according to claim 2, wherein said first input device outputs absolute coordinate data and/or relative coordinate data, and said second input device outputs relative coordinate data.

4. (Original) A personal computer system according to claim 2, wherein said first input device is a pad-type input device disposed closer to an operator than said keyboard input device, and said second input device is a stick-type input device disposed between keys of said keyboard input device.

5. (Currently Amended) A personal computer system comprising:
a first input device;
a second input device that differs from the first input device;
an output means for outputting operation signals from said first input device and from said second input device in a variable length signal format;~~and~~
a processing unit that ~~alternately selects operational between the signals in accordance with~~ from said first input device and from second input device in response to
an operation of ~~each of~~ said first input device and said second input device;
a buffer coupled to the processing unit that receives relative data from the first input device and the second input device; and
wherein said output means adds an identifier to a selected portions of the operational signals that distinguishes the input devices.

6. (Previously Presented) A personal computer system according to claim 5, wherein said first input device outputs variable information on X, Y, and Z three-dimensional coordinates, and said second input device outputs variable information on X

and Y two-dimensional coordinates, and when said second device is used, said identifier is added to a Z-information field of the signal format output from said output device.

7. (Currently Amended) A personal computer system according to claim 6, wherein said output device generates six-byte absolute coordinate data and supplies it to said processing unit in response to the variable information on the X, Y, and Z three-dimensional coordinates supplied from the first input device, and said output device converts at least three-byte displacement data into six-byte data in response to the variable information on the X and Y two-dimensional coordinates supplied from the second input device, and said identifier is added to a Z-information field of the converted six-byte data.

8. (Previously Presented) A personal computer system according to claim 7, wherein individual byte fields of the six-byte data supplied from said output device to said processing unit respectively indicate said identifier, X count information, X count and button information, Y count and button information, Y count information, and Z count information, and wherein the Z-count information becomes variable in accordance with an operation of said first input device in response to the variable information supplied from said first input device, and the Z-count information becomes fixed in response to the variable information supplied from said second input device.

9. (Currently Amended) A personal computer system according to claim 5, wherein said output device comprises a switching portion for switching between a path for converting the variable information obtained from said second input device into the six-byte and a path for outputting the variable information as at least a three-byte data.

10. (Currently Amended) An input device comprising:
an input/output port;
a first pointing device coupled to an input of the input/output port; and
a second pointing device coupled directly to the input of the input/output port;
wherein the input/output port has a single output channel through which data is transferred from the first pointing device and the second pointing device to a driver that resides on a host; and

wherein said first pointing device and said second pointing device can transmit a fixed length data stream of at least three bytes and at least one of said first pointing device and said second pointing device can transmit a fixed length data stream of six bytes.

11. (Original) The input device of claim 10 wherein the first pointing device comprises a touch pad.

12. (Previously Presented) The input device of claim 10 wherein the second pointing device comprises a pointing stick and wherein said first and said second pointing devices transmit data in a predetermined bit sequence.

13. (Previously Presented) The input device of claim 11 wherein the second pointing device comprises a pointing stick.

14. (Currently Amended) The input device of claim 13 wherein the input/output port touch pad and the pointing stick comprises a cursor controller for selecting an output from the touch pad and the pointing stick at a rate that allows a user to control devices that control an onscreen movement of a cursor through the touch pad and the pointing stick simultaneously.

smoothly in response to a signal transmitted from said driver residing on said host.

15. (Currently Amended) The input device of claim 10 wherein the input device comprises a dual pointing device, the first ~~input~~ pointing device comprises a first relative pointing device integrated with an absolute pointing device, and the second ~~input~~ pointing device comprises a second relative pointing device.

16. (Currently Amended) The input device of claim 15 wherein the second ~~input~~ pointing device further comprises a format converter configured to send identifying data to the driver that distinguishes the first pointing device from the second pointing device.

17. (Previously Presented) The input device of claim 10 wherein the first pointing device is directly coupled to the second pointing device.

18. (Previously Presented) The input device of claim 10 wherein the single output channel is a serial port capable of sending and receiving data from a processor.

19. (Currently Amended) A dual pointing device comprising:
an input/output port;

a touch pad ~~first pointing device~~ comprising a first relative pointing device and an absolute pointing device coupled to an input of the input/output port; and

a second pointing device comprising a second relative pointing device coupled to the input of the input/output port;

wherein the input/output port ~~has~~ comprises a single output ~~channel~~ port through which data is transferred from the first relative pointing device and the second relative pointing device in only one of two fixed data stream lengths to a driver that resides on a host; and

wherein the touch pad ~~first~~ and ~~the~~ second pointing devices ~~further~~ comprise cursor-control devices that smoothly control an on-screen cursor movement.

20. (Previously Presented) A dual pointing device comprising:
a single input/output port;
a first pointing device comprising a first relative pointing device and an absolute pointing device coupled to an input of the input/output port;
a second pointing device comprising a second relative pointing device coupled to the input of the input/output port and a format device configured to send identifying data to a driver that identifies the first and second relative pointing devices;
wherein the input/output port comprises a single output through which data is transferred from the first pointing device and the second pointing device to the driver coupled to the first pointing device and the second pointing device and wherein the first and second pointing devices further comprise cursor-control devices that can both control a position of a cursor.

21. (Cancelled).

22. (Cancelled):

23. (Currently Amended) A dual pointing device used to control a cursor in a computer comprising:

- a port;

- a format logic coupled to the port, the format logic configured to transmit a data stream in lengths of three and more bytes;

- a touch pad comprising a first relative pointing device and an absolute pointing device coupled to the format logic;

- a stick comprising a second relative pointing device coupled to the format logic;

- ~~the absolute pointing device comprising a sensor that translates an absolute position on a surface of the touch pad to a specific location on a screen of the computer;~~
- and

- the first relative pointing device and the second relative pointing device each comprising a cursor control device in which a movement of a cursor on the screen correlates to a movement detected by the first relative pointing device or the second relative pointing device;

- wherein the format logic is configured to embed identifying data in the data stream in response to a command received from the computer, the identifying data distinguishing the stick from the touch pad, and the port comprise a single channel through which data is transmitted to the computer.

24. (Currently Amended) The dual pointing device of claim 23 wherein the format logic is configured to transmit data in fixed lengths of at least three and six bytes.

25. (Previously Presented) The dual pointing device of claim 23 wherein the computer comprises a notebook computer.

26. (Previously Presented) The dual pointing device of claim 23 wherein the computer comprises a personal computer.

27. (Previously Presented) The dual pointing device of claim 23 wherein the format logic is coupled to a buffer that stores relative data temporarily before transferring the relative data in lengths of three or more bytes to the computer.

28. (Previously Presented) The dual pointing device of claim 27 wherein the format logic is coupled to a second buffer that stores absolute data temporarily before transferring the absolute data to the computer.

29. (Currently Amended) The dual pointing device of claim 27 wherein the buffer delivers data in fixed lengths of at least three bytes or six bytes in response to an output from a switch controller.

30. (Previously Presented) The dual pointing device of claim 27 wherein the length of the data transmitted by the format logic is controlled by the command issued from the computer.

31. (Previously Presented) The dual pointing device of claim 23 wherein the format logic is coupled to a buffer that stores absolute data temporarily before delivering the absolute data to the computer.

32. (Previously Presented) The dual pointing device of claim 23 wherein the buffer stores data temporarily before transferring the data in a length controlled by the command received from the computer.

33. (Previously Presented) The dual pointing device of claim 23 wherein the stick comprises a distortion sensor that moves the cursor in a direction of a pressure placed upon it.

34. (Previously Presented) The dual pointing device of claim 23 wherein the touch pad comprises a sensor that moves the cursor in a direction of a pressure placed upon it.

35. (Previously Presented) The dual pointing device of claim 23 wherein the stick is daisy chained to the touch pad.

36. (Previously Presented) The dual pointing device of claim 23 wherein the single channel comprises a serial port.

37. (Previously Presented) The dual pointing device of claim 23 wherein the single channel comprises a bidirectional serial data port.

38. (Previously Presented) The dual pointing device of claim 23 wherein the identifying data comprises an identification number.

39. (Currently Amended) A dual pointing device used to control a cursor in a computer comprising:

- a port;

- a format logic coupled to the serial port, the format logic configured to transmit data in multiple byte lengths;

- a touch pad comprising a first relative pointing device and an absolute pointing device coupled to the format logic;

- a stick comprising a second relative pointing device coupled to the format logic;

- ~~the absolute pointing device comprising a sensor that translates an absolute position on a surface of the touch pad to a specific location on a screen of the computer;~~
- and

- the first relative pointing device and the second relative pointing device each comprising a cursor control device in which a movement of a cursor on the screen correlates to a movement detected by the first relative pointing device or the second relative pointing device;

- wherein the format logic is configured to embed identifying data in a data stream in response to a command issued from the computer, the identifying data comprising an identification code that distinguishes the stick from the touch pad, and the port comprise a bi-directional serial channel through which data is sequentially transmitted to the computer.

40. (Previously Presented) The dual pointing device of claim 39 wherein the port comprises a serial port.

41. (Currently Amended) A dual pointing device used to control a cursor in a computer comprising:

a bi-directional serial port;

a format logic coupled to the serial port, the format logic configured to transmit data in streams of three and more bytes;

a touch pad comprising a first relative pointing device and an absolute pointing device coupled to the format logic;

a stick comprising a second relative pointing device coupled to the format logic;

and

~~the absolute pointing device comprising a sensor that translates an absolute position on a surface of the touch pad to a specific location on a screen of the computer;~~

and

the first relative pointing device and the second relative pointing device each comprising a cursor control device in which a movement of a cursor on the screen correlates to a movement detected by the first relative pointing device or the second relative pointing device;

wherein the format logic is configured to embed identifying data in the data streams in response to a processor command, the identifying data comprising an identifier that distinguishes the stick from the touch pad.

42. (Currently Amended) A method of processing data transmitted from a plurality of relative pointing devices integrated within a computer, comprising:
~~translating~~ detecting a first movement ~~on detected~~ by one of a plurality of relative pointing devices and generating ~~to~~ a first data stream associated with an on-screen movement of a cursor on a display of a computer;
detecting a second movement on a touch pad, the touch pad comprising a relative pointing device and an absolute pointing device;
monitoring a ~~serial~~-port coupled to a device driver resident to the computer;
embedding identifying data in the first data stream that identifies at least one of the plurality of relative pointing devices;
transferring the first data stream in lengths of three or more bytes to the computer through the ~~serial~~-port; and
identifying the source of the first data stream when the identifying data is decoded.

43. (Previously Presented) The method of claim 42 wherein the act of embedding identifying data in the first data stream occurs when a command from the computer is received

44. (Currently Amended) The method of claim ~~42~~ further comprising ~~translating~~ detecting a second movement detected by an absolute pointing device to a second data stream associated with an on-screen position of the cursor on the display of the computer.

45. (Currently Amended) The method of claim 44 further comprising transferring the first and the second data streams in lengths of at least three bytes or six bytes to the computer through the serial port.

46. (Previously Presented) The method of claim 45 further comprising identifying the source of the second data stream when the identifying data is decoded.

47. (Currently Amended) A method of processing data transmitted from a touch pad or a pointing stick integrated within a keyboard of a computer, comprising:

~~translating~~ detecting a first movement ~~detected by on~~ one of a plurality of relative pointing devices and generating ~~to~~ a first data stream associated with an on-screen movement of a cursor on a display of a computer;

~~translating~~ detecting a second movement ~~detected by on~~ an absolute pointing device and generating ~~to~~ a second data stream associated with an on-screen position of the cursor on the display of the computer;

monitoring a ~~serial~~-port coupled to a device driver resident to the computer;

embedding identifying data in the first data stream that identifies a touch pad or a pointing stick when a command from the device driver is received on the serial port;

transferring the first data stream and the second data stream in lengths of three or more bytes to the computer through the serial port; and

identifying the touch pad or pointing stick when the identifying data is decoded.

48. (Previously Presented) The method of claim 47 wherein the identifying data identifies a touch pad or a pointing stick.

49. (Previously Presented) The method of claim 47 wherein one of the plurality of pointing devices comprises a relative and an absolute pointing device.

50. (Previously Presented) The method of claim 49 wherein the relative and absolute pointing device comprises a touch pad.

51. (New) A dual pointing device used to control a cursor on a display screen coupled to a host comprising:

- a touch pad comprising a first relative pointing device and an absolute pointing device;
- a stick comprising a second relative pointing device;
- the touch pad and the stick each outputting operation signals to control a movement of the cursor on the display screen, wherein the touch pad outputs signals in a first format when operated as an absolute pointing device and a second format when operated as a relative pointing device;
- a format converter coupled to the touchpad and the stick, wherein the format converter receives the operation signals and outputs a data stream comprising operation signals in the same format for the touchpad and for the stick, wherein the same format is one of the first format or the second format and wherein the format converter embeds identifying data in the data stream that distinguishes the stick from the touchpad;
- a port providing a single channel through which data from the format converter is transmitted; and
- a processor coupled to the port that performs processing based on the operation signals from the format converter in accordance with an operation of each of the touchpad and the stick.

52. (New) A dual pointing device used to control a cursor on a display screen coupled to a host comprising:

- a touch pad comprising a first relative pointing device and an absolute pointing device;

- a stick comprising a second relative pointing device;

- the touch pad and the stick each outputting operation signals to control a movement of the cursor on the display screen, wherein the touch pad outputs signals in a first format when operated as an absolute pointing device and a second format when operated as a relative pointing device;

- a format converter coupled to the touchpad and the stick, wherein the format converter receives the operation signals and outputs a data stream of operation signals in the same format for the touchpad and for the stick, wherein the same format is one of the first format or the second format and wherein the format converter embeds identifying data in the data stream that distinguishes the stick from the touchpad;

- a port providing a single channel through which data from the format converter is transmitted;

- a processor coupled to the port that performs processing based on the operation signals from the format converter in accordance with an operation of each of the touchpad and the stick; and

- wherein the touchpad and the stick can be used alternately or simultaneously.

53. (New) A computer including a host coupled to a display screen and an operating system comprising:

- a touchpad comprising a first relative pointing device and an absolute pointing device;
- a stick comprising a second relative pointing device;
- the touch pad and the stick each outputting operation signals to control a movement of the cursor on the display screen, wherein the touch pad outputs signals in a first format when operated as an absolute pointing device and a second format when operated as a relative pointing device;
- a format converter coupled to the touchpad and the stick, wherein the format converter receives the operation signals and outputs a data stream of operation signals in the same format for the touchpad and for the stick, wherein the same format is one of the first format or the second format and wherein the format converter embeds identifying data in the data stream that distinguishes the stick from the touchpad;
- a port providing a single channel through which data from the format converter is transmitted to the host;
- the host including a device driver, the device driver receiving the operation signals in the same format from the touchpad and the stick and serving as a single device driver for shared processing of signals from both the touchpad and stick;
- the signals processed by the device driver undergoing further processing by the operating system to control cursor movement on the display screen.

54. (New) A computer including a host coupled to a display screen and an operating system comprising:

- a touch pad comprising a first relative pointing device and an absolute pointing device;
- a stick comprising a second relative pointing device;
- the touch pad and the stick each outputting operation signals to control a movement of the cursor on the display screen, wherein the touch pad outputs signals in a first format when operated as an absolute pointing device and a second format when operated as a relative pointing device;
- a format converter coupled to the touchpad and the stick, wherein the format converter receives the operation signals and outputs a data stream of operation signals in the same format for the touchpad and for the stick, wherein the same format is one of the first format or the second format and wherein the format converter embeds identifying data in the data stream that distinguishes the stick from the touchpad;
- a port providing a single channel through which data from the format converter is transmitted to the host; and
- a mouse connected to the host;
- the host including a device driver, the device driver receiving the converted operation signals in the same format from the touchpad and the stick and receiving operation signals from the mouse, the device driver serving as a single device driver for shared processing of signals from both the touchpad and stick and from the mouse;
- wherein the signals processed by the device driver undergoes further processing by the operating system to control cursor movement on the display screen.

55. (New) A dual pointing device used to control a cursor on a display screen coupled to a host comprising:

- a touch pad comprising a first relative pointing device and an absolute pointing device;

- a stick comprising a second relative pointing device;

- the touch pad and the stick each outputting operation signals to control a movement of the cursor on the display screen, wherein the touch pad outputs signals in a first format when operated as an absolute pointing device and a second format when operated as a relative pointing device;

- a format converter coupled to the touchpad and the stick, wherein the format converter receives the operation signals and outputs a data stream comprising operation signals in the same format for the touchpad and for the stick, wherein the same format is one of the first format or the second format and wherein the format converter embeds identifying data in the data stream that distinguishes the stick from the touchpad;

- a port providing a single channel through which data from the format converter is transmitted; and

- a processor coupled to the port that performs processing based on the operation signals from the format converter in accordance with an operation of each of the touch pad and the stick;

- wherein the operation signals supplied from the format converter to the processing unit comprise the identifying data, X count data, Y count data, and Z count data.

56. (New) The dual pointing device of claim 55 wherein the Z-count data is variable in response to variable information supplied from the touchpad, and the Z-count information is fixed in response to the variable information supplied from the stick.

57. (New) An input device comprising:

an input/output port;

a first pointing device coupled to an input of the input/output port; and

a second pointing device coupled to the input of the input/output port;

wherein the input/output port has a single output channel through which data is transferred from the first pointing device and the second pointing device to a driver that resides on a host; and

wherein said first pointing device and said second pointing device can transmit a fixed length data stream of at least three bytes and at least one of said first pointing device and said second pointing device can transmit a fixed length data stream of six bytes.

58. (New) A dual pointing device used to control a cursor on a display screen coupled to a host comprising:

a touch pad comprising a first relative pointing device and an absolute pointing device;

a stick comprising a second relative pointing device;

the first relative pointing device and the second pointing device each outputting operation signals to control a movement of the cursor on the display screen;

a format converter coupled to the touchpad and the stick, wherein the format converter receives the operation signals and outputs a data stream of operation signals in the same format for the touchpad and for the stick and wherein the format converter embeds identifying data in the data stream that distinguishes the stick from the touchpad;

a port providing a single channel through which data from the format converter is transmitted;

a processor coupled to the port that performs processing based on the operation signals from the format converter in accordance with an operation of each of the touchpad and the stick; and

wherein the touchpad and the stick can be used alternately and simultaneously and wherein the same format comprises a first format that is used when the touch pad operates as the absolute pointing device and a second format that is used when the touchpad operates as the first relative pointing device.